

## ABSTRACT

A system and method for providing successive approximation, such as can be used by a successive approximation converter or by a coherent undersampling digitizer. The system comprising a memory having a successive approximation value and a comparison system configured to receive and amplify the difference between a test signal and the successive approximation value and to convert the amplified signal to a digital signal. A multi-bit analog to digital convert can be used to convert the amplified signal to a digital signal.